Session 1C: Puget Sound/Georgia Basin Water Quality

Questions and Answers

Tim Determan
Q: When we first started with fecal coliform levels in our area, there was a health risk prediction. Does the Health Department plan on using that health risk prediction as a tool to get maybe the communication message? We are in the Pipers Creek/Carkeek/City of Seattle area.

Determan: Well, I hate to sound real bureaucratic, but because of the urban nature of that particular area, shellfish resource is classified prohibited. I'm not quite clear on the legal aspects of the definition of human health hazard and what have you, but I know my experience in other agencies for grant applications and other things, if the Department of Health has come in and said you have a serious problem here folks, healthwise, it's give you bonus points on grant applications.

Q: I guess what I was thinking that instead of having poor or bad, the risk factor goes in as an incentive to get people on the straight and narrow. I guess you are not using that criteria any more.

Determan: No, because when it gets that bad, the area is shut down and we don't sample there anymore.

Q: In Eld Inlet, what do you say to the residents to get them to cooperate?

Determan: Is there anyone from Thurston County that wants to talk about that? I'll try, but I'm from state, I'm not from Thurston County. I'll just tell you what I know. They had a team of people who were motivated and innovative and creative and very community-based. Before they sent the inspectors in digging up people's septic systems, they established little neighborhood community groups, meetings, did a lot of preparation work. They had funding in hand for people who needed repairs but couldn't afford it, they had a very rigorous method and standards that were firm and fair for determining what was a failed system and what was not a failed system. And we are talking about on-site sewage systems here. They also had at the time a district attorney who's job it was to follow up in case somebody fell through the cracks, shall we say, and they had a 75 to 80% success rate at finding and fixing on-site systems. That's my perspective, but I'm not with Thurston County, that's just what I know.

Mindy Roberts
Q: The question had to do with some of the higher peaks the measured data that I showed for the Puyallup River for the '96-97 had some predicted daily loads greater than what the measured values were.

Roberts: And I ended up having to get a duct-tape solution in there to cap the concentrations at the highest value that had been observed at that particular station, so for the Puyallup River Watershed, I think I used an 8-year period, so I didn't show you my whole 8 years. It was mostly an issue for total suspended solids and fecal coliform that go way up in many watersheds as the flows go way up and I was predicting fecal coliform of 100,000 which might have been the case in a couple. But if 500 was the highest value observed, I use that in the calculation of the annual load and capped it that so it was the highest observed at a particular station by parameter.

Q: I was wondering also, the higher frequency was added with no observation of the peaks and wondered if that frequency was fictitious?

Roberts: Our daily hind casts are based on the daily flow and daily prediction of the concentration. And I was showing you 12 data points in there, and to discover the problem of the over-estimated peaks I looked

through the whole estimated record I had for the Puyallup River Watershed. The high frequency is because there is a high-frequency oscillation of the flows, they are highly variable from day to day in concentration from day to day. We didn't find daily concentration records. That would have made the job a bit easier, I guess. But I think that the overall range of loads, I was careful not to predict a value that was beyond the range that was acceptable based on the data for a given site.

Tim Determan
Q: How deep down in the water do you sample?

Determan: For fecal coliform sampling, you dip down to about the level of your hand, you skip the surface layer—6 to8 inches. You did it straight down and tilt it sideways into the current, trying to minimize the contact with the surface. That's by standard methods and by as far as I know, Puget Sound protocols, too. We don't use our hand, we do all our sampling off of a boat and we have an extension arm with a neat little thing that you click on.

Skip Albertson
Q: How can you help us use your information to determine sorts of criteria, other kind of narrative approaches to show the health or lack of health of the Puget Sound?

Albertson: For a parameter like oxygen, that if you are looking in Puget Sound and you are comparing it to some number, some standard without looking at what's coming in from the ocean, that doesn't speak very well to the science, I think that you really look at each year what comes in from the Straits of Juan de Fuca and that monitoring out there is hard. We tried Ecology, and this program that Jan Newton helped start up at Friday Harbor, which is joint with PRISM to monitor that water coming in but I think you have to look relative to that for any human activity.

A: I would have to agree with Skip, in the main basin it's probably not a problem but the flushing of the main basin is so quick that it is hard to imagine that any kind of loading could affect the oxygen to get below a certain criteria, it's just in these side arms and in South Sound where you're set with this condition that you have no control over. The ocean varies from year to year, the conditions off the coast, upwelling in the summer that brings water all the way into the Sound is really setting the initial oxygen conditions in these deeper layers and to try and model that really depends on…You can't predict it; you have to go out and measure it, unless you are going to tie into some ocean circulation model which has their own set of problems.

Q: Would it be helpful to have for your modeling purposes a lot more of the ORCA-type data that John Dunne has created for a couple of spots in Puget Sound?

A: Yes and there's also a glider that is under development by Charlie Erickson at the University of Washington which also provides a data set collected on a much more shorter time scales.

Q: How much would it cost it per day to deploy one of these ORCAs and how much would it cost the state of Washington or anybody else to set up a network?

A: We calculated $150,000 a year for one.

Q: Is it worthwhile to continue at the same station or would it be useful to for a year or two and move some place else?

A: I think that the role of the analyzers is really to provide contacts for other studies and to better understand the ecosystem in Puget Sound and natural conditions and how they might portrayed. It's really part of a larger effort.

Q: Does that include data reduction and analysis or is that just the operation?

A: That does include data reduction.

Q: Have you talked with local governments about your findings, and what you might anticipate if you haven't?

A: The first step was we wanted to get something on paper so this conference was good kick in the pants to at least put together for the conference proceedings. Once we get the draft report, at that point, I think we will have all of our heads together, and we can go out for some shows. I've given a couple of presentations within the Department of Ecology and so folks in the southwest region know about the analysis, but until this point, there was not sufficient documentation to go out. So I would hope that it would generate some interest. It's certainly not the answer to every question, in fact I think it's just going to generate more questions at this point as any good research project might do.